

Technology Advancement in Support of NASAs Evolutionary Xenon Thruster (NEXT) System Power Processing Unit (NEXT PPU)

Completed Technology Project (2013 - 2014)



Project Introduction

This IRAD advances the Technology Readiness Level (TRL) of the NASA Evolutionary Xenon Thruster (NEXT) Power Processing Unit (PPU) to level 6. The NASA Glenn Research Center (GRC) is leading this effort; however, the unique knowledge and experience GSFC possesses, as a spaceflight center, is needed to ensure the PPU is properly matured.

The objective of this IRAD is to advance the TRL of the PPU to 6. This includes supporting GRC with requirements review and validation, design updates and hardware modifications, assessment of parts selection and radiation analysis and FPGA board development.

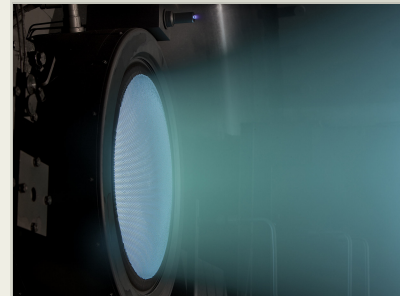
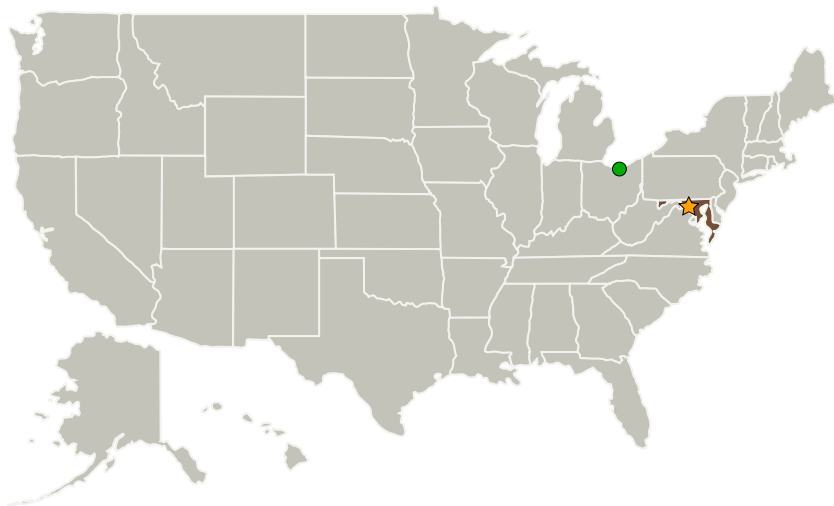
The ultimate goal of the effort is to fabricate and flight qualify a prototype PPU whose design can be implemented with the other NEXT components.

Anticipated Benefits

The development of the NASA Evolutionary Xenon Thruster (NEXT) Solar Electric Propulsion (SEP) system opens many new possibilities for planetary missions.

Technology can be used on DoD satellites

Primary U.S. Work Locations and Key Partners



NEXT Ion Thruster (Credit: Wikipedia)

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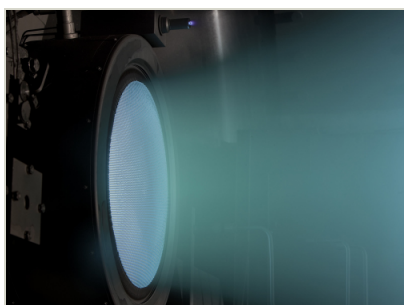


| Organizations Performing Work | Role | Type | Location |
|------------------------------------|-------------------------|-------------|---------------------|
| ★Goddard Space Flight Center(GSFC) | Lead Organization | NASA Center | Greenbelt, Maryland |
| ●Glenn Research Center(GRC) | Supporting Organization | NASA Center | Cleveland, Ohio |

Primary U.S. Work Locations

Maryland

Images



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NEXT Ion Thruster (Credit: Wikipedia)
(<https://techport.nasa.gov/image/4001>)

Project Website:

<http://sciences.gsfc.nasa.gov/sed/>

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

Project Manager:

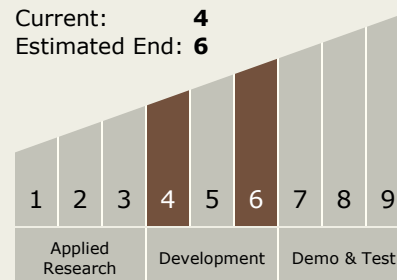
Brook Lakew

Principal Investigator:

Michael L Adams

Technology Maturity (TRL)

Start: 4
Current: 4
Estimated End: 6



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Technology Areas

Primary:

- TX01 Propulsion Systems
 - └ TX01.2 Electric Space Propulsion
 - └ TX01.2.2 Electrostatic